



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,550	09/10/2003	Allen L. Price	01573.001200	3271
5514	7590	04/20/2005	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			SALVATORE, LYNDIA	
			ART UNIT	PAPER NUMBER
			1771	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/658,550

Applicant(s)

PRICE ET AL.

Examiner

Lynda M. Salvatore

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 18-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/10/03, 9/10/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-17, drawn to ballistic material, classified in class 442, subclass 403.
  - II. Claims 18-28, drawn to process for making a ballistic material, classified in class 28 subclass 103+.

2. The inventions are distinct, each from the other because:

The inventions of Group II and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by a materially different method such as either employing fabrics (e.g., wovens, knits or non-wovens) comprising heat melting binder fibers such that the layers bond together to form an integral fabric upon the application of heat and pressure or applying a thermally activated adhesive between the individual fabric layers such that the layers form an integral fabric upon the application of heat and pressure.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Brendan Mee on 03/24/05 a provisional election was made with traverse to prosecute the invention of Group I, a ballistic material, claims 1-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims

Art Unit: 1771

18-28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. Applicant is advised that the reply to this requirement to complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1,2,4-10,13,and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coppage, Jr., US 5,660,913 in view of Thomas et al., US 2003/0022583 A1.

The patent issued to Coppage teaches a ballistic composite fabric comprising inner and outer resin bonded non-woven layers and a middle woven fabric layer (Abstract). Coppage teaches that each individual layer is made up of several sub-layers (Abstract). Said inner and outer sub-layers comprise unidirectional ballistic fibers (Abstract). Said middle woven fabric layer also comprises a plurality of sub-layers comprising ballistic fibers (Abstract). With regard

Art Unit: 1771

to the areal density limitations, Coppage teaches an areal density preferably less than about .9 pound per square foot and not more than .85 pound per square foot (Column 4, 13-25). With regard to the tensile modulus limitation, Coppage teaches a minimum tensile modulus of 500 grams per denier (Column 5, 35-40). With regard to the tenacity limitation, Coppage teaches at least 15 grams per denier (Column 5, 35-40). Coppage teaches employing polyethylene filaments to achieve said tensile modulus and tenacity values (Column 5, 34-40). With regard to the calendaring limitations, Coppage teaches calendaring the plurality of the woven sub-layers to flatten out the layers. Coppage specifically teaches calendaring forces the fibers within the woven fabric into the spaces between the main bodies of the yarns. Coppage teaches calendaring increases the stopping power of the ballistic material (Column 3, 55-Column 4, 10).

Coppage does not specifically teach a method of joining the inner, middle, and outer sub-layers together, but does disclose that the inner and outer sub-layers are resin bonded. Thomas et al., on the other hand teaches a ballistic material comprising several layers consolidated together by needlepunching (Abstract and Section 0101). Thomas et al., teaches that needlepunching holds the structure together without the use of chemical binders (Section 0104). In addition, Thomas et al., teaches that needlepunching can reduce the fabric thickness while increasing the density (Section 0111). Increased density translates into increased fabric ballistic resistance (Section 0112).

Therefore, motivated by the desire to increase the ballistic resistance of a ballistic resistant fabric material, it would have been obvious to one having ordinary skill in the art at the time the invention was made to secure the sub-layers present in the inner, outer, and middle

Art Unit: 1771

layers of the ballistic fabric material taught by Coppage with the needlepunching technique taught by Thomas et al.

With regard to the areal weight and thickness limitations, the combination of prior art does not specifically teach the claimed areal weight range or thicknesses, however, it is the position of the Examiner that it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize these parameters as a function of desired end use. For example it may be desirable to reduce the number of sub-layers to provide a thin lightweight ballistic fabric material for use in ballistic garments such as vests. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233

With regard to the backface signature recited in claim 5, the combination of prior art fails to specifically teach this property value however, it is the position of the Examiner that said property is inherent to the ballistic fabric material provided by the combination of Coppage in view of Thomas et al. Support for said presumption is found in the use of like materials such as ballistic non-woven and woven fabrics and the use of like processes such as needlepunching, which would provide for the claimed backface property. The burden is shifted to Applicant to evidence otherwise.

9. Claims 3,11,12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coppage, Jr., US 5,660,913 in view of Thomas et al., US 2003/0022583 A1 as applied to claim 1 above and further in view of Bachner, Jr., US 6,266,819.

The combination of prior art fails to teach woven layers of cross laid aramid fibers, however, the patent issued to Bachner teaches a ballistic garment comprising high tensile aramid

Art Unit: 1771

fibers (Column 6, 55-65 and Figure 5). Therefore, motivated by the desire to provide a ballistic material having high tensile strength it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the woven sub-layers in the ballistic composite taught by the combination of Coppage in view of Thomas with the high tensile aramid fibers taught by Bachner. With regard to the cross-laid orientation recited in claim 3, it is the position of the Examiner that said limitation would inherently be met with a woven structure since woven structures are commonly formed with warp and weft strands in a perpendicular relationship.

With regard to claim 11, the combination of prior art fails to teach employing staple aramid fibers, however, the non-woven sub-layers in the ballistic composite taught by the combination of Coppage in view of Thomas are carded non-woven webs (Column 5, 60-65). It is commonly known in the art that staple fibers are used in the formation of carded non-woven webs. As such, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the carded non-woven sub-layers in the ballistic composite taught by the combination of Coppage in view of Thomas with the high tensile aramid fibers taught by Bachner.

With regard to claim 12, the combination of prior art fails to teach a plurality of layers of unidirectional tows cross-laid at 90 degree angles, however, Bachner teaches in one embodiment a plurality of unidirectional high tensile aramid fibers cross laid at 90 degree angles to provide a single layer of composite body armor (Column 6, 56-Column 7, 5).

Therefore, motivated by the desire to provide a ballistic fabric material with sufficient tensile strength to function as body armor it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the plurality of woven sub-layers

Art Unit: 1771

in the ballistic composite taught by the combination of Coppage in view of Thomas with the plurality of unidirectional aramid fibers cross laid at 90 degree angles as taught by Bachner.

With regard to claim 16, the combination of prior art fails to teach providing a ballistic fabric material with a water repellant coating, however, the patent issued to Bachner teaches applying a coating of polyurethane to the ballistic resistant material (Column 4, 24-30).

Therefore, motivated by the desire to provide a water repellant ballistic fabric material it would have been obvious to one having ordinary skill in the art to provide the ballistic composite taught by the combination of Coppage in view of Thomas with a the polyurethane water repellant coating taught by Bachner.

10. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coppage, Jr., US 5,660,913 in view of Thomas et al., US 2003/0022583 A1 as applied to claim 7 above and further in view of Cordova et al., US 5,440,965.

The combination of prior art fails to teach providing a plurality of knitted or stitched layers, however, such structures are known alternatives to woven structures. For example, the patent issued to Cordova et al., teaches an armor system comprising stitched, woven or knitted layers (Column 13, 39-40 and 55-63). Therefore, motivated by the desire to broaden the structure of the plurality of layers, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the middle sub-layers in ballistic composite taught by the combination of Coppage in view of Thomas with stitched or knitted fabrics as taught by Cordova et al.



***Conclusion***


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynda M. Salvatore whose telephone number is 571-272-1482.

The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 16, 2005  
ls

  
TERREL MORRIS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700